

PROCEEDINGS  
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SIX NEW SPECIES AND TWO NEW SUBSPECIES OF  
CEPHALOPODS FROM THE PHILIPPINE ISLANDS<sup>1</sup>

By GILBERT L. VOSS

*Institute of Marine Science, University of Miami*

During the course of the study of the cephalopods collected by the U. S. Bureau of Fisheries steamer "Albatross" in the Philippine Islands during the years 1907-1909 a number of new species and subspecies were found. A full and detailed report of the collections has been submitted to the United States National Museum for publication in the Bulletin of that institution. This includes detailed descriptions and illustrations of the fifty-four species now known to occur in those islands. However, since a considerable delay has occurred in the publication of this work, brief descriptions of the new species and subspecies are here given in order to make them available to other students of this group of mollusks.

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Family SEPIIDAE

*Sepia prionota*, new species

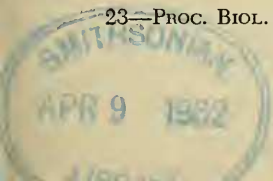
*Holotype*: Female, mantle length 61.0 mm, "Albatross" Sta. D5151, from off Sirun Island, Sulu Archipelago, Tawi Tawi group, in 44 meters, coral sand and shell, 18 February 1908. USNM 575326.

*Paratypes*: Three females, mantle length 26.0-36.2 mm, from "Albatross" Sta. D5151, from off Sirun Island, Sulu Archipelago, Tawi Tawi group, in 44 meters, coral sand and shell, 18 February 1908. USNM 575327.

*Description*: The mantle is slender, about  $\frac{1}{2}$  as wide as long, with long narrow marginal fins which originate at the anterior mantle margin and terminate posteriorly in free lobes. The funnel is large and reaches almost to the base of the arms.

The head is large. The buccal membrane is seven lobed, without

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suckers. The arms are in the order,  $4.1 = 2 = 3$ , the ventral arms about 34–40 per cent of the mantle length. All of the arms are strongly compressed, thick at the base and tapering to sharp points. The suckers are in four rows on all of the arms and are equipped on their horny rings with very numerous square tipped teeth on the entire margin, those on the dorsal margin long and slender.

The tentacles are stout, moderately long, and compressed. The clubs are small, expanded, the floor of the hand lying free posteriorly. The suckers are in six rows of which about four of the second dorsal row are greatly enlarged. The horny rings bear long narrow square tipped teeth which are greatly crowded and larger on the distal half.

The sculpture consists of a keel on all but the ventral arms, consisting of a series of about 6–8 high rounded lappets originating at the base of the arms and extending to near the tip. There are scattered rugae and papillae along the dorsum of the mantle, the base of the fins, and the sides of the ventral surface of the mantle, and a patch of papillae below and in front of each eye.

The shell is narrow, rounded both anteriorly and posteriorly and with a short stout spine. The ventral surface is concave throughout.

*Remarks:* The specific name is derived from the Greek *prionotus*, jagged or saw-toothed, in reference to the saw-like keels on the arms. This character alone seems sufficient to separate this species from all others presently known from the Indo-Pacific region.

#### Family SEPIADARIIDAE

#### *Sepiadium gracilis*, new species

*Holotype:* Female, mantle length 16.0 mm, "Albatross" Sta. D5290, from Varadero Harbor, Verde Island, southern Luzon, 22 July 1908, at ship's side with electric light, 11:30 PM to 12:30 AM USNM 575325.

*Description:* The animal is small, with a saccular mantle which is about twice as long as wide and is joined to the head in the neck region by a narrow commissure. Laterally the mantle margins project forward as broad lappets shielding the eyes. The fins are small, less than half the mantle length, and longitudinally oval.

The funnel is long, extending beyond the eyes, and is fused with the mantle on each side. The head is large, wider than the mantle, and has large eyes with distinct ventral lids.

The arms are in the order 3.1.2.4, fat and muscular and united at their bases by a deep web which forms in sector D a deep sheath for the tentacles. The arm suckers are in two rows throughout and are borne on short pedicels. The horny rings appear smooth, bordered by a narrow papillate area.

The tentacles are short, stout, and nearly as large as the arms. The clubs are short and slightly expanded. The suckers are in six distinct rows and are very small with round apertures.

There is no gladius.

*Remarks:* This species may be separated from all other species of the

genus by the narrow mantle, small fins, arm suckers in only two rows and the tentacular suckers in six rows.

The specific name *gracilis* is from the Latin meaning slender, in reference to the much narrower body in this species.

Family SEPIOLIDAE

***Euprymna phenax*, new species**

*Holotype*: Male, mantle length 11.0 mm, taken at ship's side by electric light, Nogas Point, Panay, 3 February 1908. USNM 575328.

*Description*: The mantle is saccular, rounded posteriorly and connected to the head by a broad nuchal commissure. The fins are small, about 43 per cent of the mantle length and circular in outline.

The head is large, with large eyes which have distinct lower lids. The funnel is long, free for half its length and extends beyond the eyes.

The arms are in the order 3 = 2.4.1. They have no protective membranes. The suckers are biserial, obliquely inserted and have small, smooth apertures. The suckers are mostly missing but there is no evidence of especially enlarged ones.

The left dorsal arm is hectocotylized. Basally there are about ten pairs of normal suckers covering about  $\frac{2}{3}$  of the arm of which the third sucker from the base in the ventral row is modified into a large fleshy papilla. The distal third of the arm bears about 10 pairs of suckers closely crowded, their bases forming a palisade on either side of the arm with the suckers of each row facing outward.

The tentacles are long and slender and bear short, strongly curled clubs which possess about 12–14 rows of small suckers. There is a broad membrane dorsally originating at the carpal section and extending to the tip.

There is no gladius.

There is a well developed saddle-shaped luminous organ on the ink sac.

*Remarks*: This species may be separated from the other species of the genus by the presence of biserial suckers, the more simplified hectocotylus and the apparent lack of any enlarged suckers on the arms.

The specific name is derived from the Greek *phenax* meaning impostor, in reference to the biserial suckers known only in this species.

***Euprymna albatrossae*, new species**

*Holotype*: Male, mantle length 24.0 mm, from Cubagao Anchorage, Catanduanes Island off southeastern Luzon, 9 June 1909. Electric light. USNM 575331.

*Paratypes*: Two males, mantle length 22.0–20.5 mm and three females, mantle length 20.0–15.0 mm, from Cubagao Anchorage, Catanduanes Island, off southeastern Luzon, 9 June 1909, electric light. USNM 575332.

*Description*: The mantle is saccular, bluntly rounded and united to the head by a broad nuchal commissure. The fins are large, nearly  $\frac{2}{3}$

the length of the mantle, and inserted a little anterior to the mantle midpoint. The funnel is stout, tubular, and free for over half of its length.

The head is large, as wide as the mantle width, with prominent eyes which have small eyelids. There is a large pore posterior to and slightly ventrad of the pupil.

The arms are in the order 2.3.4.1 or 2.3.4 = 1 and stout, strongly keeled for most of their length. The suckers are quadriserial and in the females there is no disparity in size. In the males on the dorsal arms about eight suckers of the middle section of the outer rows are greatly enlarged, the suckers of the median rows all small. On the dorso-lateral arms about 14 of the suckers in both the dorsal and ventral rows are enlarged, the medians small. On the latero-ventral arms the suckers are all small, those of the outer rows only slightly larger throughout than the medians. On the ventral arms the suckers of the two inner rows are nearly minute but the outer rows have about eight median suckers which are about 3-4 times the size of those of the median rows.

In the males the left ventral arm is hectocotylized. Basally one or two suckers form fleshy papillae but distad the suckers are in four rows, the apertures slit-like, on fleshy papillae, which form two pairs of rows facing outwards, palisaded at their bases.

The tentacles are short and stout, with small, only slightly expanded clubs bearing about 20 rows of very minute suckers.

The spermatophores somewhat resemble those of *E. berryi* except in the structure of the mid-portion where there is a distinct round posterior section.

*Remarks:* This species may be distinguished from other members of the genus by the order of the enlarged suckers on the arms and the prominent keels on the first three arm pairs. This species is named in honor of the steamer "Albatross" from which the specimens were collected.

#### *Sepiola trirostrata*, new species

*Holotype:* Male, mantle length 12.0 mm, taken by electric light at ship's side, Nogas Point, Panay, 3 February 1908. USNM 575329.

*Paratypes:* Two males, mantle length 10.0-11.5 mm, two females, mantle length 11.0-12.3 mm, taken by electric light at ship's side, Nogas Point, Panay, 3 February 1908. USNM 575330.

*Description:* The mantle is short and saccular, broadest anteriorly, and in the males tapering in a cone to a sharp posterior end. The mantle is connected with the head by a broad nuchal commissure. The fins are small, semicircular with a deep, free anterior lobe. The funnel is long, slender and tubular.

The head is large, with enormous eyes with distinct ventral lids. There is a small round olfactory pore just posterior to and ventral of the eyelid.

The arms vary between the sexes but in general have a formula of 2.3.4.1. In both sexes the third arms are stouter than the others and strongly turned inward. In the males, the third arms are enormously stout, over twice as broad as the other arms.

In the females the suckers are biserial throughout and normal, but on the third arms the suckers are very small basally for three to four pairs after which they are abruptly larger. In the males the ventral suckers of the first and second arms are  $\frac{1}{3}$  larger than those of the dorsal row. In the third arms, there are about four pairs of minute suckers after which those of the ventral rows only become greatly enlarged.

In the males the left dorsal arm is hectocotylized. Basally there are two pairs of normal suckers equal in size. Distad of these in the ventral row is a large swollen papilla turned downward and outward. On the outer side of the arm beneath this swollen papilla are two smaller ones, long and slender. Distad the arm is twisted through  $45^\circ$  to the right. At the point of twist, there is a small papilla on the oral surface followed by a ridge which extends to the end of the arm. Dorsally, two rows of palisaded suckers extend to near the tip of the arm, which is tightly coiled.

The tentacles are long and slender, with short expanded clubs bearing four rows of small suckers.

The ink sac is a double kidney shape with an ill defined photophore in each lobe.

*Remarks:* The peculiar structure of the hectocotylized arm serves to separate this form from both of the Indo-Pacific species. The name *trirostrata* is given because of the three papillae on the hectocotylized arm instead of two in its closest ally *S. birostrata*.

Family LOLIGINIDAE

*Doryteuthis reesi*, new species

*Holotype:* Male, mantle length 70.0 mm, from off Port Maricaban, southern Luzon, 20 July 1908, electric light. USNM 575323.

*Paratypes:* Forty-three males, mantle length 43.0–66.0 mm, thirteen females, mantle length 51.5–62.0 mm, from Port Maricaban, southern Luzon, 20 July 1908, electric light. USNM 575324.

*Description:* The mantle is long and slender, about  $\frac{1}{5}$  as wide as long, with a small lappet on the dorso-anterior margin and a shallow excavation beneath the funnel with sharp lateral angles on either side. In the males there is a ventro-median ridge on the anterior  $\frac{3}{4}$  of the mantle. The funnel is small, stout, nearly covered by the mantle. The fins are small, about 50 per cent of the mantle length in the males, less in the females. The head is small, slightly wider than the mantle.

The arms are short, about 25 per cent of the mantle length, in the order 3.4.2.1 although in the males the left ventral arm may be the longest. The suckers are biserial and in both sexes the horny ring is smooth proximally but armed with about seven long square-tipped teeth on the distal margin.

In the males both ventral arms are hectocotylized. The left arm has about 19 normal suckers basally, becoming smaller distally; beyond this for over half the length of the arm there are about 22 pairs of long, round papillae or pedicels each terminating in a minute, ringless sucker.

Pairs two to seven of these are much longer than the others. Beyond the terminal papilla the tip of the arm is round and smooth, cone-shaped. The right ventral arm is shorter than its fellow with normal suckers basally. After the seventh pair they diminish rapidly in size until the fifteenth pair when the suckers disappear and only a double row of minute suckerless pedicels remain. There are about 17 pedicels barely discernible, after which the end of the arm is long, slender and smooth.

The tentacles are short, only a little longer than the arms. The club is large, expanded, with quadriserial suckers which are equal in size. The largest hand suckers bear 11-12 sharp slender teeth on the rings of which three to four on the distal side are much longer.

The buccal membrane has seven points, each of which may bear from one to six small suckers.

The gladius is slender, with a narrow, straight-sided vane with thickened and more heavily colored lateral margins.

*Remarks:* This is the third species of small *Doryteuthis* described from the Indo-Malayan region. It may easily be distinguished by the hectocotylization of both ventral arms.

The name *reesi* is given in recognition of the contributions made by W. J. Rees, formerly of the mollusk division of the British Museum, to the field of teuthology.

#### Family HISTIOTEUTHIDAE

#### *Calliteuthis celateria pacifica*, new subspecies

*Holotype:* Female, mantle length 74.0 mm, "Albatross" Sta. D5564, Dammi Island, between Jolo and Tawi Tawi, 432 meters, 21 September 1909. USNM 575453.

*Paratypes:* Two females, mantle length 33.0-52.0 mm, "Albatross" Sta. D5589, Mabul Island, Borneo, 494 meters, 29 September 1901. USNM 575457. One female, mantle length 51.0 mm, "Albatross" Sta. D5118, Sombrero Island, 292 meters, dark green mud, 21 January 1908. USNM 575454. One female, mantle length 58.0 mm, "Albatross" Sta. D5221, San Andreas Island, between Marinduque and Luzon, 354 meters, green sand, 24 April 1908.

One female, mantle length 28.0 mm, Albatross Sta. D5268, Matacot Point, Verde Island Passage, 310 meters, sand and pebbles, 8 June 1908. USNM 575455.

*Description:* This subspecies conforms in almost every detail with the description of *Calliteuthis celetaria* Voss, 1960 from off Bermuda (Voss, 1960, p. 424) so that a description would be repetitious. It differs from *C. celetaria celetaria* in the following respects.

#### *C. celetaria celetaria*

1. Swimming membrane of third arm originates near base of arm and is less than  $\frac{1}{2}$  the arm length.
2. Tentacular suckers toothed only on distal margin.
3. Seven large, four small light organs around left eye.

*C. celetaria pacifica*

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| <p>1. Swimming membrane of third arm originates at proximal <math>\frac{1}{4}</math> arm length and extends to tip of arm.</p> | <p>2. Tentacular suckers toothed on entire margin.</p>         |
|  | <p>3. Seven large, 8-9 small light organs around left eye.</p> |

Besides these differences, the carpal arrangement of suckers and pads is different in a slight degree. The Philippine specimens lacked pigmentation, but the Atlantic subspecies is a vinous red.

*Remarks:* The subspecific name *pacifica* is given to distinguish this group from its Atlantic counterpart. Since the species of *Calliteuthis* are all widespread bathypelagic forms, *pacifica* will probably be found to occur throughout the Indo-Pacific region.

Family OMMASTREPHIDAE

*Nototodarus sloani philippinensis*, new subspecies

*Holotype:* Female, mantle length 180.0 mm, "Albatross" Sta. D5444, off Atalaya Point, Batag Island, east coast of Luzon, 565 meters, 3 June 1909. USNM 575451.

*Paratype:* Female, mantle length 101 mm, "Albatross" Sta. 5135, 11 miles of Jolo Light, Jolo Island, 299 meters, 7 February 1908, USNM 575452.

*Description:* This subspecies shows the general characters of the other subspecies of *Nototodarus sloani* except in the features of the arm and tentacular suckers.

Two types of arm suckers are present, based upon their dentition. The first, characterized by a single large median tooth on the outer or distal margin which is long, sharp and often upturned, is found on the basal 7-8 pairs of suckers. On either side of the giant median tooth are noticeably smaller teeth graduating downward in size but continuing entirely around the sucker ring in those of the fourth to the eighth pair, about 20 teeth in all. The first few pairs have smooth rings. The fourth to the eighth pairs have broad, shallow to triangular teeth on the proximal border. Beyond the basal eight pairs the suckers are distinctly changed, the proximal border flattened, entirely smooth.

The distal border has 6-7 long slender teeth. The first few suckers have the median tooth much longer than the others but within two to three pairs they become equal and continue to the end of the arms. In none of the series are there any intermediate smaller teeth.

The tentacular club has four rows of suckers on the hand, of which the suckers of the median rows are about 3-4 times the size of the marginal ones. The largest suckers of the hand have about 14-18 long sharp teeth, the outer one the largest, alternating with broadly triangular or rounded teeth which are much smaller. Distally the smaller suckers have numerous sharp slender teeth separated by smaller ones in between.

*Remarks:* This subspecies lies intermediate between *Nototodarus sloani gouldi* of Australia and *N. sloani hawaiiensis* of the Hawaiian

group. It may be separated from both by the dentition of the suckers described above. Its subspecific name refers to the only area from which it is presently known.

LITERATURE CITED

- Voss, Gilbert L. 1960. Bermudan cephalopods. *Fieldiana: Zoology*, 39(40): 419-446, text-figs. 73-75.